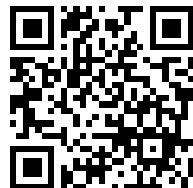

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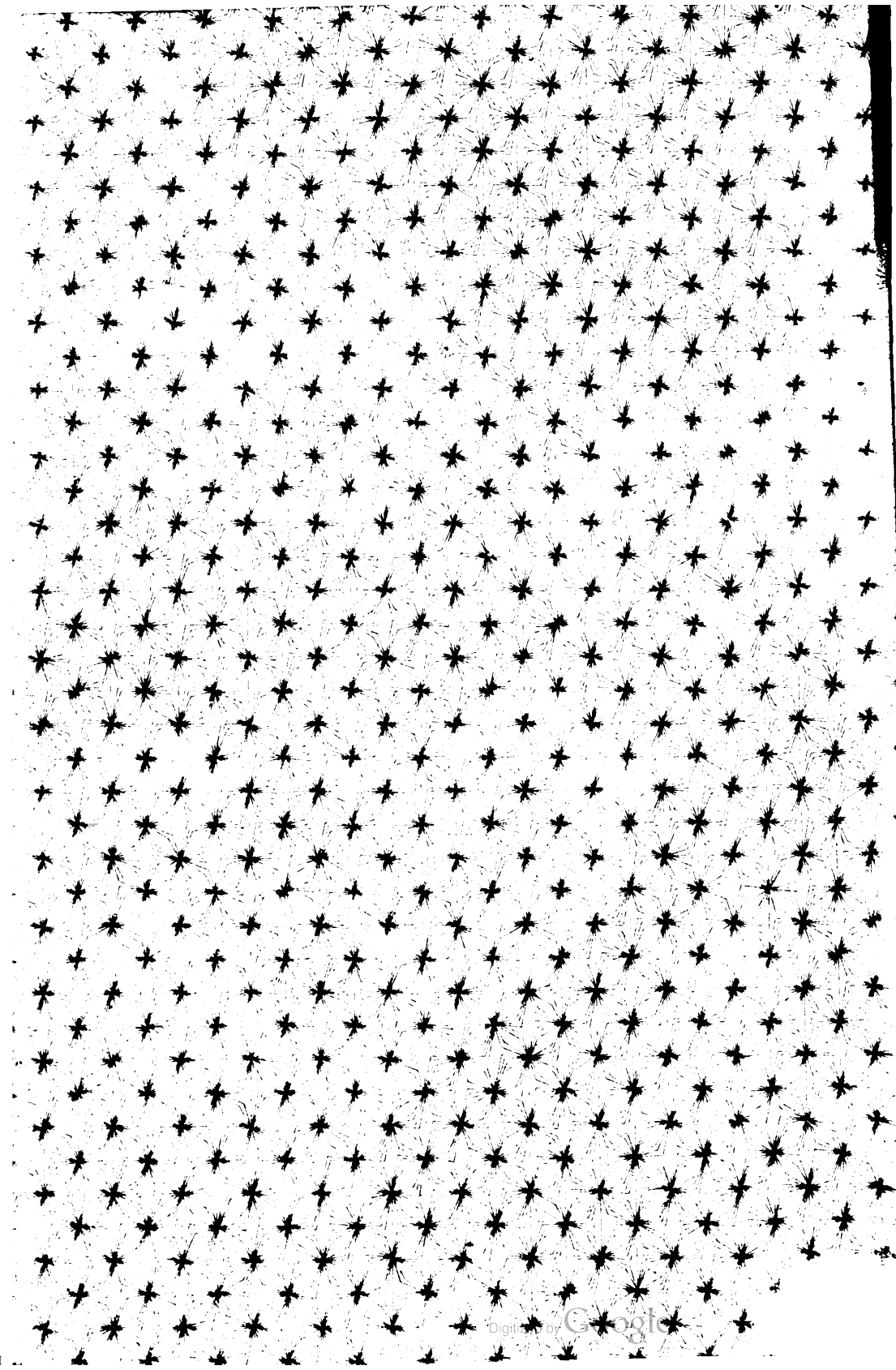


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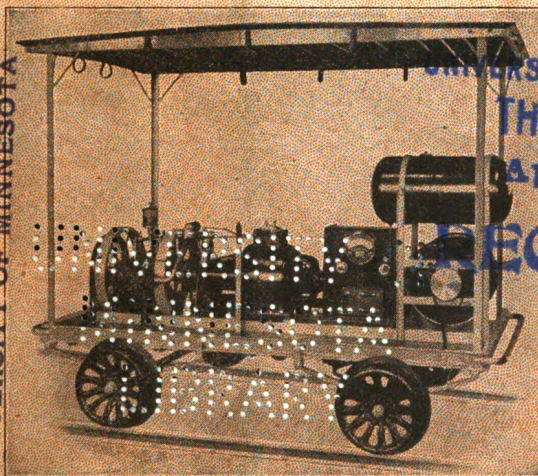
IDEAL POWER

A MONTHLY MAGAZINE
DEVOTED TO COMPRESSED AIR AND ELECTRICAL APPLIANCES



ROCKFORD SPIKE DRIVING CAR NO. 6

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IDEAL POWER

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Vol. 9.

MARCH, 1913.

No. 12.

No. 1 Electric Signal Bonding Outfit

(See cut on front cover)

This apparatus has been designed for furnishing electric current for the operation of Duntley Electric Drills for the rapid drilling of holes for signal bonding on steam railroads. It consists of a single cylinder 4-cycle gasoline engine direct connected to a $1\frac{1}{4}$ k. w. generator wound for 125 volts. The engine and dynamo are direct connected and mounted on a welded steel frame, made of 3-in. channel steel and when detached from the truck can be provided with two pipe handles about six feet long, so that the entire outfit can easily be carried by two men.

The generating unit may also be mounted on a 4-wheel truck with welded channel steel frame and supplied with pressed steel wheels. This truck has a wheel base of 50 inches. The generating outfit is held to the truck frame with two bolts and may be readily detached by removing them. The weight of the four-wheel truck is 130 pounds and the combined weight of the truck and generator is approximately 500 pounds. This outfit and truck can easily be removed from the track by two men.

The engine develops 5 h. p. at a normal speed of 1,500 r. p. m. Both valves are mechanically operated. The hard-

ened steel crank shaft running in imported ball bearings is entirely enclosed and dust proof.

Lubrication is supplied by a force feed oiler and this one oil pump takes care of all the bearings except the bearings of the dynamo.

Ignition is by a Bosch high tension magneto, no batteries being necessary either for starting or operating.

Cooling is effected by means of a fan shaped fly wheel of large diameter, which, at the speed of 1,500 r. p. m. gives a very strong blast of air. The carburetor is provided with an electric control, operating in conjunction with the generator to insure steady voltage under varying load conditions.

The generator is rated at $1\frac{1}{4}$ k. w. and furnishes direct current of 125 volts. It is compound wound to take care of excessive loading. The shaft is supplied with ring oiling bearings.

The switch board has provision for making connections to two electric bonding drills. A fuse block is enclosed in the switch case, and lock covers are provided so that the entire switch board may be locked up, and as the gasoline shut-off valve is also inside the switch case, it is possible to lock up the entire

cated as to come in the bottom of the piston ring grooves. These pins pass through elongated holes in the cylindrical portion of the valve, which we will term the tongue, and which extends into the piston, and these pins limit the outward movement of the valve.

Due to continual hammering, the pins and valve itself, are gradually worn through, and must be replaced. This in itself is not so serious, assuming that

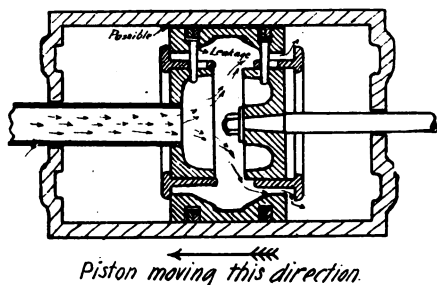


Fig. 1.

the pins are replaced before they wear through and allow the valve to fall into the cylinder. More serious is the wear of the pin in its hole in the piston, if it once gets loose, as it opens a passage from the pressure side to the intake side of the piston, as indicated by the arrows, marked "Possible Leakage." The only way to remedy this is to provide a new piston, as the width of the piston ring groove limits the size to which the hole can be reamed out.

As regards clearance, this old form of the valve has much less than the new. There is very little projecting from the face of the piston, when the valve is closed, and by providing an annular recess in the head to receive it, the clearance with this valve is quite small, that is, the inlet valve clearance. The outlet valve clearance is, of course, another matter.

As regards wear, this is excessive, due to the weight of the valve, and, with this old type, is hard to remedy. The valve is heavy and is supported by the tongue, which extends into, and rides on the piston. Like all horizontal valves, it tends

to wear downward, out of line, due to its weight, and the continual sliding of the surfaces on one another. The wear that takes place on the piston can only be remedied by a new piston.

Coming now to the new type of valve. This valve is superior to the old type in every point except that of clearance, but the clearance is excessive.

As shown in Fig. 2, this valve is the old type, reversed. Instead of riding directly on the piston, it rides on a follower bolted to the piston, this follower also serving to limit the outward movement of the valve instead of the pins referred to in connection with the older type, which passed through elongated holes in the tongue.

There is still a tendency to wear down out of line, but the reduced weight diminishes this tendency somewhat, and there is the further advantage that the wear comes on the follower instead of the piston proper, and the trouble due to wear can be overcome by replacing the worn follower with a new one, instead of requiring an entire new piston, as in the old style of valve.

The clearance introduced by this con-

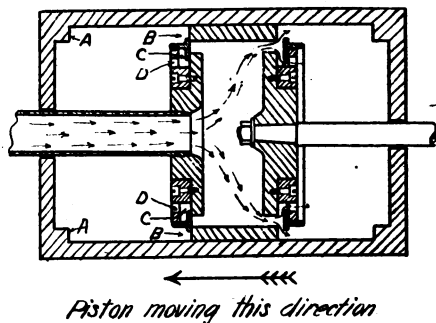


Fig. 2.

struction, however, is excessive and there is no way of eliminating it. An annular projection is turned on the head, as indicated by "A," Fig. 2, which occupies the space around the outside of the valve at the point "B," which largely eliminates clearance at this point. Two other spaces, however, cannot be dis-

pensed with, and their confined volume is quite a considerable amount. One is the space "C," which is between the follower and the valve, to permit of the necessary travel in opening. The others are the holes indicated by the letter "D." These holes are provided to carry away the air from both edges of the valve and thereby overcome the necessity for an excessive lift. If all the air had to pass by one edge, it is evident,

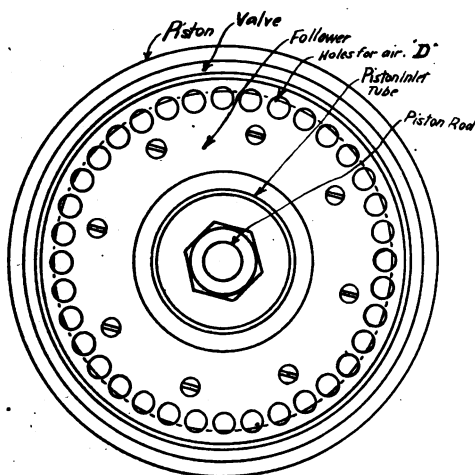


Fig. 3.

that to provide a passage way equal to that of the port in the piston, the lift would have to be equal to the width of the port. This would mean excessive lift, or narrower port, and by letting the air escape past both edges of the valve, the lift is reduced to half the width of the port. On account of the tongue, the air cannot get out except by providing the holes through the follower referred to. These holes are about an inch in diameter and vary in number according to the size of valve, as many being crowded into the circumference as is possible, without weakening the casting too much. An end view of a piston is shown in Fig. 3.

The combined volume of the spaces "C" and "D" adds to the volume of the clearance space to such an extent as to reduce the volumetric efficiency of the

new style valve way below that of the old style, except for the excessive weight of the latter, which, due to its inertia, impedes the inflow of the air to the cylinder as pointed out in the previous article.

The previous comments applied to the old or the new style of valve, as indicated in connection with each. The following comments apply to all valves of this type, whether of the new or the old pattern.

As regards accessibility for inspection or repair:

These valves fall far short of the ideal. In fact, they are the most inaccessible valves there are. The back valve, the one that is most accessible, requires that the cylinder head be removed. The front valve requires in addition that the piston be removed.

As regards tightness:

These valves, due to their large size and tendency to wear out of line, are far more difficult to keep tight, than the ordinary form of poppet valve, and still more so than the Corliss valve, which merely slides back and forth across the port.

In regard to the hollow piston rod:

The space required in the engine room in which to install the machine is increased by the length of stroke and the length of the elbow connection to the air conduit, besides.

This hollow piston rod necessitates an extra stuffing box, in addition to the one on the regular piston rod, and an unusually large one at that. From three to six times the amount of packing required for the regular piston rod is needed to pack the stuffing box of the piston inlet tube.

The increased amount of the surface sliding through the stuffing box increases in corresponding measure the chance for leakage.

The friction of the packing against this surface is in proportion to its extent, and the circumference is several times that of the regular piston rod.

Furthermore, to take air into the cylinder under pressure, it requires two of these big stuffing boxes, one where the

rod passes through the cylinder head, the other where it enters the sleeve from which it receives the air.

These piston inlet tubes are threaded on the end, and are screwed into the piston. They have a tendency to work loose, especially if there is not perfect alignment of piston rod with head. If not discovered promptly, the thread becomes worn, and then it is hard to keep them tight. As this thread forms the joint between the air under compression in the cylinder, and the air at lower pressure in the inside of the piston, leakage occurs at this point. A leak which is not easily discovered, because, like a leaky piston, it is out of sight.

As to temperature of air entering the cylinder:

The incoming air, in passing through the hollow piston rod and piston, must come in contact with surfaces which have been heated by the air, undergoing compression on the opposite side, and, as any increase in temperature of the incoming air expands it, there is a reduction in volumetric efficiency on this account, although it would not be apparent from an indicator diagram, because the indicator merely shows the pressure of the air in the cylinder, without regard to its temperature.

There is one advantage, however, in the piston inlet that must not be overlooked.

Due to the fact that no space is required in the heads for inlet valves, it enables more outlet valves to be used than is possible with any other form of inlet valve. With prevailing piston speeds, however, a sufficient number of outlet valves can be got into the space available, when Corliss inlet valves are used, and, as present piston speeds are not likely to be greatly exceeded, the advantage of the extra outlet valve space is of minor importance.

Coming now to a summing up of the advantages and disadvantages of this type of valve.

A complete summing up of all the points we have brought out would be too long, as some of them could not be expressed in a few words.

Referring briefly, however, to the five requirements mentioned in the previous article, and the degree in which they are fulfilled by the piston inlet valve:

It does not perfectly fulfill the first after wear takes place, and is not easily restored to a perfect seat.

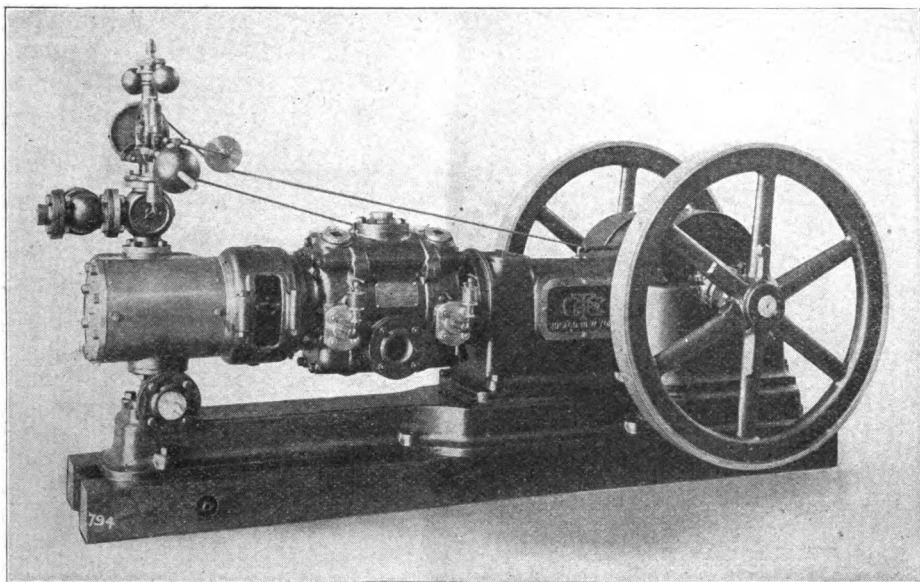
It does not fulfill the second, due to its inertia.

It does not fulfill the third, due to lack of means for closing promptly at the end of the stroke, the inertia effect, which is claimed to accomplish this, being practically nil at the end of the stroke, its force having been spent before the end of the stroke is reached, and at a time when it was a positive disadvantage.

It does not fulfill the fourth, especially the new style valve with which the clearance is excessive.

As to the fifth, it comes a long way from fulfilling this. In fact, it falls about as far short of this as it is possible for any valve to.

Not a very creditable showing, and yet the air compressors equipped with valves of this type in use today run into the thousands. How is it to be accounted for? Easily enough. The valve is a fairly good valve, even though it is far from being the best. The valve was formerly a patented article, which gave it prestige. A corps of trained exponents proclaimed for its virtues, which it did not actually possess, and convinced a great many purchasers that it was only on account of its being "patented" that it was not used by every manufacturer of air compressors, and, that in buying a compressor of that particular type, the customer was getting the only, only, really perfect inlet valve. Why did the purchaser fall for it? Why does the public fall for a good share of the things that are "put across"? Simply because they let somebody else think for them. How many of the purchasers of air compressors reason out for themselves the action of the inlet valves, or any of the rest of the working parts of the compressor? How many, on the other hand, swallow what is told them, whole?



Class L-SS, Chicago Pneumatic Compressor.

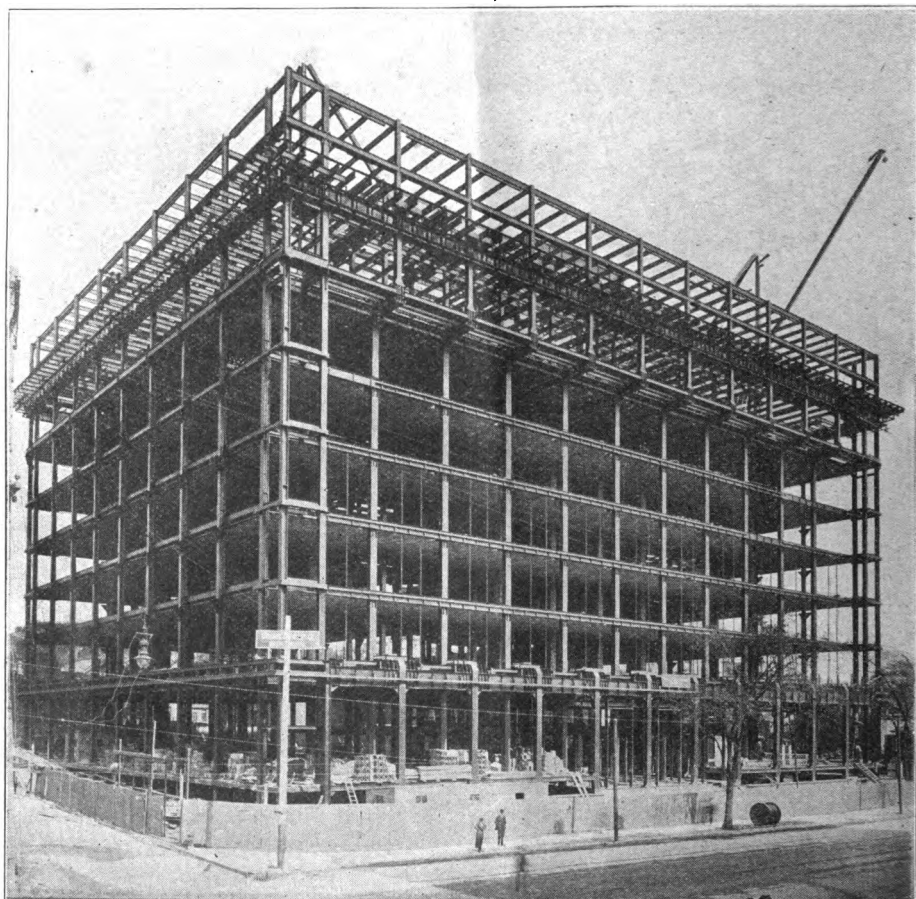
A New Design of Straight Line Air Compressor.

We illustrate herewith a new air compressor with tandem steam and air cylinders which has recently been designed and put on the market by the Chicago Pneumatic Tool Company. While the machine in general conforms to usual practice in air-compressor design, it contains some special features. As seen by the drawings, the air cylinder is placed next to the guides and the steam cylinder in the rear. From a manufacturing point of view this has the advantage of making the same castings usable for either a steam-driven machine or belt-driven machine. The belt-driven machine is identical with the steam driven, except that the steam cylinder and the junction piece between the steam and air cylinders are removed, a shorter piston rod is used and a shorter sub-base. The pedestal on which the steam cylinder is supported is so designed that it can be set to face in four different directions for convenient connection to the exhaust pipe.

The yoke between the steam and air cylinders is made with a horizontal joint so that the heads of the air or

steam cylinders next to this yoke can be removed without disturbing the cylinders themselves. The inlet valves of the air-compressor cylinder are of the Corliss rotary type, mechanically actuated, and lubricators are mounted on the bonnets of each of these air valves so that the lubricant reaches the valve directly and is carried into the cylinder with the in-rushing air. This arrangement takes the place of the ordinary sight-feed lubricator. The air-compressor discharge valves are of the poppet type. The cylinder is water-jacketed on both heads and barrel. The cross-head is cylindrical and runs in bored guides. The cranks and eccentrics are inclosed by a planished-iron casing so that the main bearings, cross-heads, crank pins and eccentrics are all oiled by splash lubrication. A special oil catcher is provided at the top of the casing which receives the splashing oil and carries it through a pipe to the top cross-head guide and cross-head pins. The main bearings are babbitt-lined and made up of removable cylindrical shells in three parts with adjustments for taking up wear.

The belt-driven type L S B is illustrated on front cover of this issue.



New Northwestern Insurance Building.

The completed structural work of the new Northwestern Insurance Building, Milwaukee, Wis., is here shown. The building contains 6,200 tons of structural steel, and is the heaviest steel building erected in Milwaukee. The riveting work was done with four No. 90 Boyer Riveting Hammers operated by a "Chicago Pneumatic" Class G. S. S. air compressor. The Geo. A. Fuller Co. is the contractor, and Bergendahl and Bass erected the steel work.

It Is a Fact.

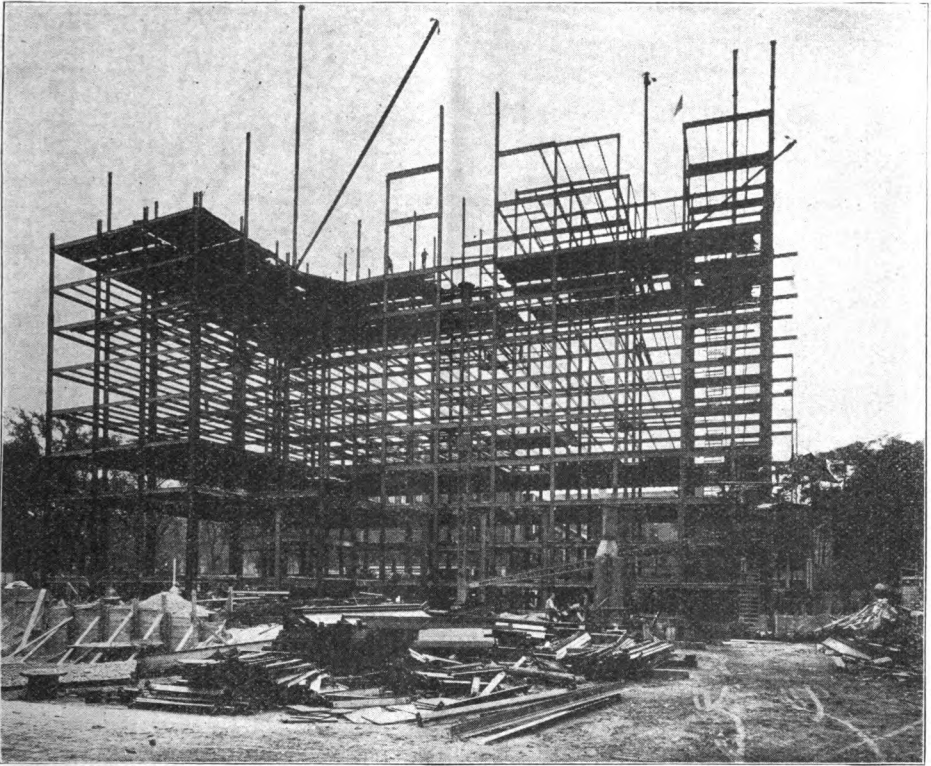
That Venice and Montreal are in about the same latitude.

That the Pacific end of the Panama canal is farther east than the Atlantic

Man From an Electrical Standpoint.

Some inventive genius has discovered that the average man dissipates about 25 kilowatt-hours of energy a day in motion, muscular action, mental exertion and heat radiation. This is equivalent, it is said, to a continuous expenditure at a rate of about one hundred watts, or the rating of a 1-8-horsepower motor. In spite of his high body temperature—98.6 degrees Fahrenheit—and large radiating surface, man's heat losses are surprisingly small—about fifty watt-hours an hour, or about one-half of the total energy expenditure. As a heating device the average man is thus about equal to a 16 candle-power carbon filament lamp.

Next!



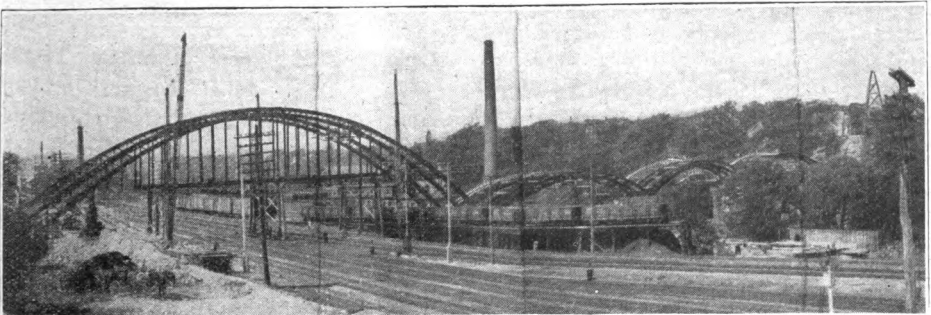
**Eastern Bridge and Construction Co.
Erect New Hotel and Viaduct.**

In the cut above we show the Bancroft Hotel, at Worcester, Mass., in process of construction. The work is being done by the Eastern Bridge and Construction Co., who are using three No. 60 Boyer Long Stroke Riveting Hammers on the job.

Mr. C. T. Wright, Superintendent,

states that 44,000 rivets were driven, and that the tools were at no time in the repair shop, while this work was being done.

The photograph shown below is that of a viaduct erected by the same company for the City of Fitchburg, Mass. The No. 60 Boyer Long Stroke Riveting Hammers were also used on this job, and 24,000 rivets driven.





The Little Giant on Fillmore St. Hill, San Francisco.

Saves 18 Hours Out of 24.

S. O. Willits, Proprietor of the Atlantic City Mineral Water Co., Atlantic City, N. J., recommends the Little Giant Commercial Car. He says, under date of Dec. 21st:

"From personal experience concerning the cost of delivery by horses or motor car, I find that the cost for maintenance of motor cars, properly used, take less care than horses, and can produce at least four times the work. Made a trip with my 'Little Giant' Model D truck last week with a fair load, of over 80 miles in six hours, which would have taken a pair of horses twenty-four hours to cover the same territory, at an expense of \$2.07 for gasoline and oil, which is only one case in many showing the conditions. Therefore, know that reliable motor trucks as the 'Little Giant' has proven to be, can be a safe investment, paying a large interest.

"Had the car out in the snow this A. M. and find that she responds to the power necessary to pull through."

Never Laid Up For Repairs.

E. D. Keyes & Co., wholesale grocers of Rutland, Vt., write under date of Dec. 30 as follows:

"Your favor of the 27th at hand.

"We are pleased to advise you that the truck we purchased of you through your local agent last summer, has given us excellent satisfaction in every way. It has plenty of power, and we have never experienced any troubles whatever, and we have never had to lay the car up for repairs so far.

"We can recommend this car to any one looking for a ton motor truck."

Operating Problems of Motor Trucks.

The self-propelled business vehicle has come to stay, says the Literary Digest. It has attained extraordinary success. In the majority of instances it has proved itself far superior to the horse. In scores of trades, it is supplanting permanently the horse.

Owners of commercial cars are now concentrating their efforts upon placing

the new system upon a scientific basis of operation. The search is for maximum efficiency. The refinement of truck service is a science in itself.

When the horse ruled supreme, not one merchant or manufacturer in a thousand knew with any degree of accuracy operating costs. Thus the truck was introduced upon a system full of inefficiency and waste.

Horse-drawn vehicles have been operated under low tension methods. The motor system must be operated under high tension methods to secure the best results.

It is as important to know how to key your delivery system up to top-notch efficiency as it is to know what truck is best suited to your work.

Actual operating costs are just beginning to be known. Driver's reports, repair sheets, mileage tables, charging or gasoline sheets are bringing truck operation up to a business-like basis. They are helping to reduce every lost and idle minute.

Methods of loading or unloading are of vital moment. Two department stores used trucks of the same size and make. It cost one firm ten cents per package to deliver, the other firm six cents—the difference due to loading systems.

Systematic care of the commercial car means much. A delivery wagon in a large retail establishment has run 22 months without missing a day—thanks to careful handling and upkeep.

Pneumatic Tools in Photo Plays.

Evidently moving picture shows have opened up a new field for pneumatic tools. A 1-in. valveless Keller hammer was recently sold to the Rex Amusement Co., which operates the Grand Central Picture Show of St. Louis. A small compressor is used, and whenever a picture is shown in which men are at work erecting a steel building, instead of calling on the orchestra to rattle the drums, the compressed air is turned on and the valveless hammer does its stunt to the Queen's taste.

Little Giant Drill Polishes Marble.

Messrs. Brown & Mullaney, San Francisco, are using a No. 10S Little Giant Drill for polishing marble table legs. The polishing of these legs is a very difficult job, and when done by hand requires at least three weeks to polish each piece, whereas by the use of the No. 10S Little Giant Drill, they are able to do the entire lot in less than two weeks.



Mr. Brown, who is shown in the picture as holding the machine, is a very enterprising man in the stone industry. He was one of the very first to adopt pneumatic tools for carving.

Barrelology.

The Chinese have never used barrels as packages for their merchandise, and the reason that has been assigned for it is that they have never found a way of putting in the last head of the barrel without having a Chinaman inside to hold it up.

Just for Fun.

A man entered a drug store in a hurry and asked for a dozen two-grain quinine pills.

"Shall I put them in a box, sir?" the clerk asked.

"Oh, no," said the man. "I am going to roll them home."

Of Course He Wasn't.

Lady—I want a box of cigars for my husband.

Clerk—Domestic?

Lady—Not very.

IDEAL POWER

PUBLISHED MONTHLY
In the Interest of Compressed Air
and Electrical Appliances

BY THE
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C. I. HENRIKSON	Editor
Vol. 9	JANUARY, 1913. No. 10.

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Send 25 cents and have your name put on our
subscription list.

Editor's Note.

Mr. Sherwood regrets that due to press of other work, he is compelled to discontinue his series of "Air Compressor Talks Without Mathematics," but he expects to be able to resume them in the near future.

Cleveland Twist Drill Calendar.

The Cleveland Twist Drill Company, Cleveland, Ohio, have issued a very attractive calendar which, with the mechanical data it embodies, will be found extremely useful in shops and to engineers and mechanics generally. Copies may be obtained from them on request as long as the limited edition lasts.

Swan Goes With Oil Power Eng. Corp.

Mr. John J. Swan, formerly associated with the Chicago Pneumatic Tool Company, New York, as manager of the New York office and later as mechanical engineer in the compressor department, has become associated with the Oil Power Engineering Corporation, New York.

Some Recent Publications of the Chicago Pneumatic Tool Company.

Any of the new publications enumerated below will be supplied on request, and a special favor will be conferred if, in making such request, reference is made to this magazine.

Electric Bulletin E. 22.—This is devoted to heavy duty electric drills for alternating current and supersedes Bul-

letin E. 9. The construction of these drills are shown and full specifications on all sizes are given.

Electric Bulletin E. 26.—This is devoted to Universal Electric Drills in all sizes, from $\frac{1}{4}$ -inch capacity up to 2 inches. The feature of these drills is that they will operate on either the direct or single phase alternating current in either 110 or 220 volts.

Electric Bulletin E. 27, superseding E. 20.—This covers a line of heavy duty electric drills for direct current only in both side and center spindle types, in capacities from $\frac{3}{8}$ to 2 inches in metal drilling, and from $\frac{3}{4}$ inch to 4 inches capacity in wood boring.

Little Giant Truck Supplement.—This is a 32-page supplement to "Ideal Power," which is devoted exclusively to Little Giant Commercial Cars. How the Chicago Pneumatic Tool Company came to go into the Commercial Car business is treated at length. There are also articles on the auto delivery truck, and its relation to the retail merchants. How to judge, select and care for the Motor Truck. The Little Giant Commercial Car's relation to Motor Life Insurance and a number of other articles which will be of interest to anyone who possesses or contemplates the purchase of a delivery truck.

Bulletin No. 124 is the second of a series of eleven bulletins covering the general pneumatic tool business of the company. The first of these bulletins, No. 121, on Pneumatic Rammers, was issued in September. Full specifications on every type of pneumatic hammer sold by the company are given, including a number of special types and forms. There are line drawings, giving the dimensions of standard button and conical rivet sets. Also drawings giving the shank dimensions of chisels adapted for the various hammers. There is also a comprehensive article on the "Care of Pneumatic Hammers," by Mr. G. H. Hayes, the company's mechanical engineer.

Circular No. 134.—This consists of a Comparative Analysis of the cost of delivery by the Little Giant Commercial Car and horse and wagon, compiled

from actual data collected during a period of one year of 312 working days—installations ranging from one Little Giant to ten are compared with three horse and wagon and fifteen horse and wagon units respectively, bringing the motor truck delivery problem down to a dollars and cents basis and making this circular of great interest to anyone who contemplates the purchase of trucks.

Folder No. 135.—This is a folding postcard of sixteen pages and illustrates a number of new Little Giant cars with full specifications of Model D.

Form No. 136.—This consists of a number of testimonial letters bound up in legal form, the cover of which bears this legend: "Testimony in the case of the 'Little Giant' vs. Other Motor Trucks—Being a collection of evidence which, when presented to an impartial JURY resulted in a verdict for the 'Little Giant'—Trial held in the mountains of Pennsylvania."

Compressor Bulletin No. 34-F.—This is a twenty-eight page bulletin conforming in size to the other compressor bulletins which have been recently issued and announced in these columns. It is a complete treatise on the design and construction of Class G Chicago Pneumatic Compressors. Every detail of these machines is illustrated and described in a concise but interesting way.

Didn't Matter.

The night watchman of a large hotel saw an apparition in white moving along the hall at 2 a. m. He hastened his steps, and tapped on the shoulder what proved to be a man.

"Here, what are you doing out here?" asked the watchman.

The man opened his eyes and seemed to come out of a trance.

"I beg your pardon," he said. "I am a somnambulist."

"Well," said the watchman, "you can't walk around these halls in the middle of the night in your nightshirt, no matter what your religion is."

Sales and Factory Organizations of the Chicago Pneumatic Tool Company Hold Their Annual Convention.

The annual convention of the sales and factory organizations of the Chicago Pneumatic Tool Company was held at the Show Rooms of the Company, 1337 So. Michigan Ave., on January 9, 10 and 11, concluding with a banquet on Saturday evening, the 11th, at the Chicago Automobile Club. Nearly a hundred of the company's representatives were present.

It was without a doubt the best convention ever held by the Chicago Pneumatic Tool Company, and presented many original features never before applied to convention proceedings. While there were no tangible evidences of the mechanism by which the convention was controlled, the precision and regularity with which the scheduled events were pulled off, the harmony that prevailed, the intense interest that was manifested, testified to the far-sightedness, the subtle planning, the natural organizing prowess of President W. O. Duntley, who had personally arranged and engineered the whole program.

In a brief but inspiring opening address on the morning of the 9th, Mr. Duntley warmly expressed his appreciation of the successful efforts of his men and then turned the convention over to them, while he took his place in the rank and file and touched elbows with the youngest and newest as well as the oldest member of the Chicago Pneumatic family.

A feeling of fellowship and equality characterized the proceedings. Opinions were freely expressed; questions were freely asked, and while there were many heated arguments and discussions, they were settled by the preponderance of evidence and all the differences and animosities that were produced, were dispatched, buried and forgotten.

In President Duntley's remarks at the opening of the convention, he complimented and congratulated his salesmen on the excellent showing of 1912 in

which all previous records for sales were broken. He attributed it to the general prosperity of the country, the splendid efforts of the sales department, the support and resourcefulness of the factories and last but not least, the efficiency of the organization.

Each department has a head whom Mr. Duntley holds personally responsible for results. Each department head knows what is expected of him; he knows the limits of his authority and he is given carte blanche instructions to get his results and to co-operate with the other departments in obtaining results. There is no "Butting in" of one department on another. Concentration of energy, singleness of purpose, freedom from restraint, recognition for services performed and ingenuity displayed are the letters of the alphabet that spell success in the Chicago Pneumatic organization. The result is a corps of enthusiastic, efficient department heads, a cabinet of specialists in their respective lines, on whom Mr. Duntley depends, with whom he works, and on whom he relies for the success of the company.

All arrangements for the care of the men had been made to the last detail, so that it was possible to get maximum efficiency out of the convention. The morning sessions opened at 9:00 and continued until 12:00. The afternoon sessions held sway from 1:00 until 5:00 and the evening sessions from 6:30 until 10:00. Both luncheon and dinner were served at the New Southern Hotel, a few doors north of the meeting place.

The salesrooms of the company at 1337 Michigan Ave. were ideal for a convention of this kind. Working exhibits of all the new and some of the old products of the company were displayed and demonstrated. On the walls were the standings of the various territories, showing their comparative sales for a number of years back. Among the mottoes that were displayed were these: "For the Love of Mike, Be Brief"; "Only Fools and Dead Men Never Change Their Minds"; "A Cat May Be Indifferent, a Fool May Laugh at an Assembly of Wise Men, But Only a Man With a

Brain Can Be Attentive, Quiet and Thoughtful"; "Don't Speak Unless You Have Something to Say and When You Have Said It SIT DOWN"; "When We Stop Learning, We Stop Growing," etc.

The convention proper opened at 1 o'clock on Thursday afternoon when for two hours—from one to three—Mr. W. P. Pressinger, Manager of the Air Compressor Department, presided and conducted the discussions that were brought up in this line. From 3 to 5 the Railroad Department held sway, Mr. C. E. Walker, Manager, conducting the meeting. In the evening Mr. H. J. Kinman, Manager of the Cleveland factory, displayed and demonstrated a large line of new machines, explaining the details carefully and illustrating by actual tests their power and efficiency. On Friday, the 10th, the convention was in charge of Mr. J. G. Osgood, General District Manager. There were discussions by each of the branch managers and a number of the salesmen, the session lasting until 5 o'clock. On the evening of the 10th, Mr. L. E. Summers, Manager of the Detroit factory conducted the meeting and explained and demonstrated some new types of machines, and a great many matters pertaining to pneumatic hammers and other products of the Detroit plant were discussed. The Electrical Department under Mr. C. B. Coates convened at 9 o'clock on Saturday morning, holding its session until 12 o'clock. There were discussions by many of the salesmen, also by Mr. James E. Burke, President, and Mr. G. A. Faure, Superintendent, of the Burke Electric Co. The Commercial Automobile Department under the guidance of Vice-President G. A. Rees, convened at 1 o'clock, holding its session until 3. The work accomplished by this department in making the Little Giant truck and the plans for the future were discussed at length. Mr. H. A. Gillis, President of the Motor Truck Corporation, this company's representative in Washington, D. C., delivered a very interesting and instructive speech and complimented the advertising department on the assistance it was giving.

The banquet held at the Chicago Automobile Club on the evening of the 11th concluded the convention and was a most enjoyable affair. Nothing was lacking to make it interesting, and the assembly did not break up until the wee sma' hours of the morning.

The Old Guards, including Mr. J. F. Duntley, the Grand Daddy of the tool company, were gathered about the round table at which President W. O. Duntley presided.

After the banqueters had taken their places, Mr. W. P. Pressinger the silver-tongued orator of the company, in a brief but inspired address, presented Pres. Duntley with a white Carrara Marble statue of "A Greek Woman" by Carrodossi. It was a beautiful token and represented the appreciation of an organization second to none in the world when loyalty, enthusiasm and efficiency are considered.

Mr. Duntley responded feelingly and expressed his thanks, after which the banquet proceeded.

G. R. Giroux, who has borne the distinction of being the company's comedian, was christened "Caruso" as well, for the exquisite rendering of a number of songs in a clear, strong baritone.

Toasts were drunk to the managers of the company's foreign offices, including Mr. Fred Johnson and W. G. Corner of London and Mr. Ludwig Oberauer of Berlin.

Speeches, stories and songs punctuated the menu which was excellent, but which none but the insider could appreciate when such delicacies as these are considered: "Ball Bearings a la Kimman," "Cream of Airolene Souffle," "Don Casa Hose," "Roquefort Cheese" (holes drilled by Duntley Electric Drills), "High Pressure Scotch Punch au Mackie," etc., etc.

The climax of the evening was a speech by Fred Richmond of the Richmond Machinery Company, which represents the Chicago Pneumatic Tool Company at Salt Lake. Mr. Richmond referred to the festivity that was under

way which he had no wish to dampen or disparage—but, in surprisingly eloquent words that could only come from a deep well of emotion he made an allusion that brought not only absolute silence and attention from his hearers but at which many of them were visibly moved.

He referred to the thoughts that must be passing through the mind of Mr. J. F. Duntley, the Grand Daddy of the Tool Company, who had seen the very beginning of the organization which step by step had grown into one of the largest manufacturing and selling forces in the commercial world. Except a few of those present, none of them could realize what hardships characterized the early days of the company and how the trails had been blazed by the pioneers. He alluded to these pictures which like a pageant must be passing through Mr. Duntley's mind and then, drawing from a storehouse of eloquence, clear and wholesome as the west itself, he brought vividly to mind the picture of the father stepping to one side that his son, capable and strong, might pick up the burden and carry it further on to victory. What greater joy could come into a father's life than to see a son crowned with the glory of a success that is destined to perpetuate the family name in honorable history.

Mr. Richmond's speech was all too short, but it was wonderfully refreshing and it will go down in Chicago Pneumatic history as a memorable event. Those who participated in the convention and at the banquet will remember it as not only one of the most instructive but one of the most enjoyable periods of their lives.

She Was Still There.

The sick man had just come out of a long delirium. "Where am I?" he said feebly, as he felt the loving hands making him comfortable. "Where am I? In heaven?"

"No, dear," cooed his devoted wife, "I am still with you."

Hair Sewed on Bald Heads.

Dr. Szekely Ferencz has devised a method for implanting hair into the scalps of baldheaded persons. In carrying out the process the scalp is first carefully cleansed and anesthetized with a solution of novocaine. The operator uses a number of small hooks, made of gold wire, and in the eyelet of each hook a doubly folded hair is inserted. The hook is then pushed into the scalp with the aid of a Pravatz needle, of which from 300 to 400 are in readiness all prepared with hook and hair, and, of course, thoroughly sterilized before use. When the needle has been pushed into the scalp it is turned at a right angle and then pulled out, leaving the hair under the skin fastened by the outstanding end of the hook. As at one setting more than from 300 to 400 hairs can be implanted, a full head of hair requires from twenty-five to forty settings, assuming that from 10,000 to 20,000 hairs will cover a head. Dr. Szekely is some times able to apply the treatment every alternate day. If there is inflammation around a hair this is pulled out and the inflammation promptly ceases.

Woman's Concoctions.

"When a woman prepares refreshments for a party," said a cynical person, "she takes the inside out of something and puts in it the inside of something else. Then she pours a yellow mixture over the result and its success depends upon the difficulty the guests have in telling what it was before she began fooling with it."

He Was Going Some.

A group of visitors was going through the county jail and a burly negro trusty was called to open doors for the visitors.

"How do you like it in here?" one of the women asked.

"Like it, ma'am? If evah Ah gets out o' heah Ah'll go so fer frum here it'll take nine dollars to sen' me a postal card."

"Get Up, Rosy, We're Afraid You've Killed Him."

Now, Miss Rosy Muldoon,
From the frozen lagoon,
Thought the strap hanging stunt quite mean.

So she tripped down the aisle,
In elegant style,
To a seat, all quite empty, t'would seem.

She sat down in a flurry,
But arose in a hurry,
All wrought with excitement, I ween.

She looked down at her side,
And there she espied,
The remnants of Skinny Nodine.
A. C. V., Moline, Ill.

Willing to Risk One.

The Christmas church services were proceeding very successfully when a woman in the gallery got so interested that she leaned out too far and fell over the railing. Her dress caught in a chandelier, and she was suspended in mid-air. The minister noticed her undignified position and thundered at the congregation:

"Any person in this congregation who turns around will be struck stone blind!"

A man, whose curiosity was getting the better of him, but who dreaded the clergyman's warning, finally turned to his companion and said:

"I'm going to risk one eye."

Next?

A traveler in Indiana noticed that a farmer was having trouble with his horse. It would start, go slowly for a short distance, and then stop again. Thereupon the farmer would have great difficulty in getting it started. Finally the traveler approached and asked, solicitously:

"Is your horse sick?"

"Not as I knows of."

"Is he balky?"

"No. But he is so danged 'fraid I'll say whoa and he won't hear me, that he stops every once in a while to listen."



People are actually what they seem—
after they die.

Tact is merely the art of getting what
you want.

Anyway, a bass drum drowns a lot of
bad music.

A bird in the hand does not get the
early worm.

The half is better than the whole—
if you are the one who has to give up.

Instead of laughing at the mistakes
of others, try to profit by your own.

It is easy for a man to go wrong if
he has no particular aim in life.

No matter how perfect an artificial
eye may be, it's an unsightly thing.

Freshly-creased trousers are often in-
dicative of an unpaid tailor bill.

If you accept charity some one is sure
to say you don't deserve it.

Professional politics seems to be the
great American game.

Airships and tramps have no visible
means of support.

Some men run for office and others
win in a walk.

The more men know, the less they
believe.

For every hot day gone there's a cold
one coming.

It's easier for a girl to knit her brow
than to darn socks.

The rising generation should get up
when the alarm clock gets busy.

A modest man gets over it before he
meanders very far from home.

Platonic love by any other name would
generate just as much gossip.

Lots of things come to the man who
waits until he doesn't want them.

It takes a woman to manage a man with-
out being able to understand him.

Cupid's idea of economy is to substi-
tute the light of her eyes for electric
light.

A reformer may be willing to supply
the pattern if somebody else will do the
work.

A girl expects to be perfectly happy
when married because she has had no
experience.

You'll not be able to throw any more
light on the subject by burning your
candle at both ends.

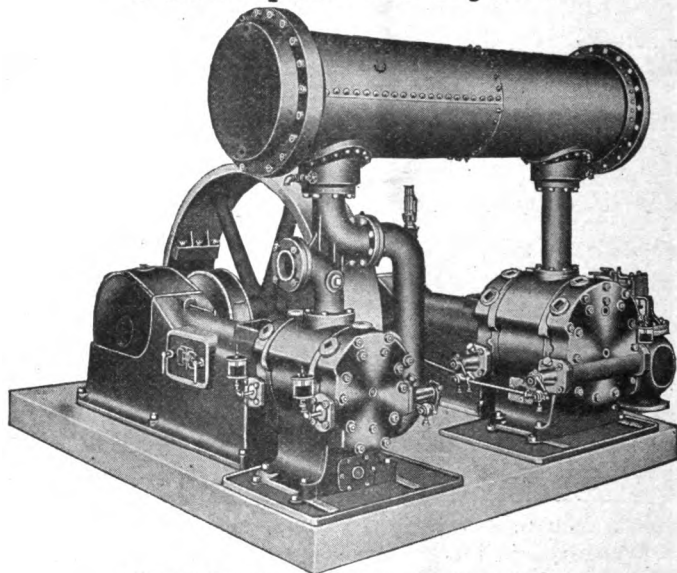
If some men would quit looking for a
soft political snap and stick to their reg-
ular employment they would be better
off financially.

The Psychological Moment

in the Life of an Air Compressor

is that particular Instant in its career when the profits and economies from its use have so accumulated that it can figuratively turn to its owner and say—

"I have paid for myself"



Chicago Pneumatic Compressor. Class M-CB

In common with much machinery that is placed on the market, some compressors never pay for themselves.

Some pay for themselves when they are about ready for the junk pile.

A "CHICAGO PNEUMATIC" compressor not only pays for itself, but it does so early in its career while it is still in the Prime of its Life.

Chicago Pneumatic Compressors are built in over 300 sizes and styles for operation by steam, belt, gear, gasoline engine or direct motor drive.

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Roadmasters Want It!

At the 30th Annual Meeting of the Roadmasters' and Maintenance Association of America, held on September 10th to 13th, 1912, in the convention hall of the Hotel Statler, Buffalo, N. Y., the Committee on New and Improved Track Appliances reported as follows:

Motor Hand Cars for Section Men and Extra Gangs

A gasoline motor hand car of simple design weighing from 650 to 700 pounds is one of the latest innovations in the maintenance of way department, and when placed in the hands of a reasonably intelligent foreman is a good investment and is recommended. Place them in the hands of each foreman first who in the estimation of the roadmaster is capable of handling them properly, and it will only be a short time when every foreman will study their mechanism and all will be able to handle them as easily as the common hand car.



Roadmasters want the "ROCKFORD" Because it has These Features:

Safety Device to regulate speed. This feature is optional with purchase.

Magneto Ignition eliminates dry cells, spark coil and timer.

Welded Steel Channel Frame preserves alignment of crank shaft and prevents strain of engine.

Automatic Force Feed Oiling System insures positive and sufficient lubrication.

Write for Catalogue and Circular Showing Cost of Operation

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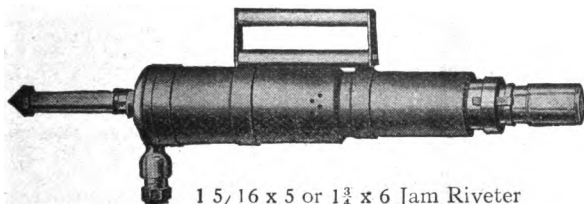
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Jam Riveting with Compressed Air

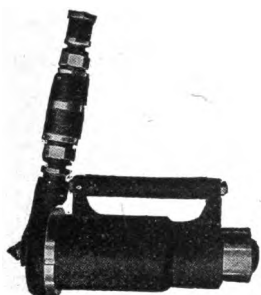
Jam Riveters, with wood handles, are arranged for use with or without extension or tail piece. They are particularly adapted for riveting between channels on ship or structural work, and also for flue expanding and crown sheet cleaning on locomotives, or wherever riveting must be done in close quarters.



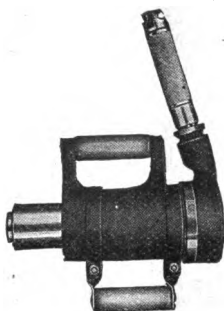
1 5/16 x 5 or 1 3/4 x 6 Jam Riveter

The 1 5/16 x 5 will work in 20 1/2 inch space
Code..... Ableness

The 1 3/4 x 6 will work in 24 inch space.
Code..... Ablepsy



1 1/2 x 3 3/8 Short Jam Riveter
Will work in
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These will work in 8-inch space



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Will work in
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For narrow spaces when the ordinary jam riveter cannot be used we recommend our short jam riveters, in four standard sizes as shown. The longer the stroke of the piston, the more powerful the blow, so it is desirable to use as long a jam riveter as possible.

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CONVENTION DATES.

March 18-20, 1913—National Railway Appliances Association at Chicago.
 March 18-20, 1913—American Railway Engineering Association at Chicago.
 May 6-9, 1913—Air Brake Association (annual) at St. Louis.
 May 19-21, 1913—Railway Storekeepers' Association at Chicago.
 May 26-29, 1913—Master Boiler Makers' Association at Chicago.
 June 11-13, 1913—American Railway Master Mechanics' Association at Atlantic City, N. J.
 June, 1913—Association of Railway Electrical Engineers at Atlantic City, N. J.
 August, 1913—Traveling Engineers' Association at Chicago.
 Sept. 9-11, 1913—Roadmasters and Maintenance of Way Association at Chicago.
 Oct. 21-23, 1913—American Railway Bridge and Building Association at Montreal.
 1915—International Railway Congress at Berlin.

ENGINEERING SOCIETIES, ETC.

American Association of Railroad Superintendents—Secretary, E. H. Harman, St. Louis, Mo.
 American Electric Railway Engineering Association—Secretary-Treasurer, Norman Litchfield, 98th St. and 3rd Ave., New York City.
 American Institute of Electrical Engineers—Secretary, F. L. Hutchinson, 33 W. 39th St., New York City; Honorary Secretary, R. W. Pope.
 American Institute of Mining Engineers—Secretary, Geo. C. Stone, 29 West 39th St., New York City.
 American Mining Congress—Secretary, J. F. Callbreath, Jr., 602 Mounsey Bldg., Washington, D. C.
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 American Society of Engineering Contractors—Secretary, J. R. Wemlinger, 13 Park Row, New York City.
 American Society of Heating and Ventilating Engineers—Secretary, W. W. Macon, 29 West 39th St., New York City.
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 Canadian Society of Civil Engineers—Secretary, Clement H. McLeod, 413 Dorchester St., West, Montreal, Que.
 Canadian Railway Club—Secretary, James Powell, Grand Trunk Ry., Montreal, Que.
 Central Railway Club—Secretary, H. D. Vought, 95 Liberty St., New York.
 Civil Engineers' Society of St. Paul—Sec-

retary, L. S. Pomeroy, Old State Capitol Bldg., St. Paul, Minn.
 Cleveland Engineering Society—Secretary, F. W. Ballard, Cleveland, Ohio.
 Connecticut Society of Civil Engineers—Secretary-Treasurer, J. Frederick Jackson, New Haven, Conn., Box 1304.
 Detroit Engineering Society—Secretary-Treasurer, Frederick H. Mason, 614 Moffat Bldg., Detroit, Mich.
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 Engineers' Club of St. Louis—Secretary, E. A. Gast, P. O. Box 333, Cincinnati, Ohio.
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 Engineers' Society of Western New York—President, Louis H. Knapp, 366 Ellicott Square, Buffalo; Secretary, Thos. J. Rogers, Municipal Bldg., Buffalo.
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 Internal Combustion Engineers' Association—Secretary, S. N. Walker, 416 W. Indiana St., Chicago.
 International Railway Congress Association—President (of the International Commission), A. Dubois, 11 Rue de Louvain, Brussels, Belgium; Secretary General, L. Weissenbruch, same address.
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 Western Society of Engineers—President, O. P. Chamberlain, 184 La Salle St., Chicago; Secretary, J. H. Wardner, 1735 Monadnock Block, Chicago, Ill.

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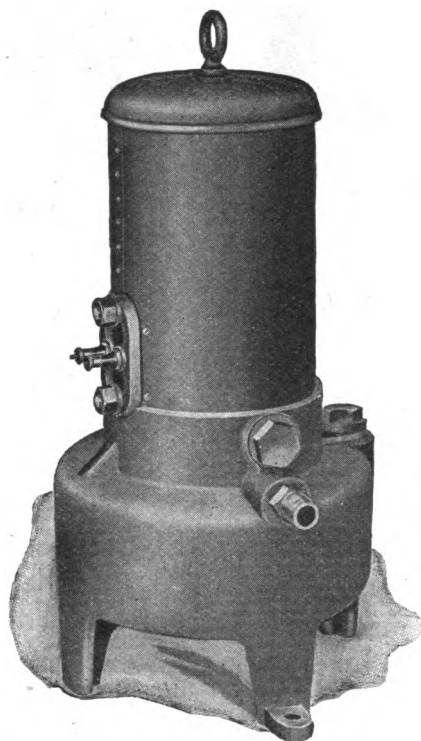
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Air

Reheater

Hot compressed air, not only does twice the work, but absolutely eliminates all annoyance due to frost.

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Railway Storekeepers' Association—President, W. F. Jones, N. Y. C. & H. R. R. R., New York; Secretary, J. P. Murphy, Box C, Collinwood, Ohio.

Railway Supply Manufacturers' Association—Secretary, J. D. Conway, 2136 Oliver Bldg., Pittsburgh, Pa.

Roadmasters' and Maintenance of Way Association—Secretary-Treasurer, L. C. Ryan, C. & N. W. Ry., Sterling, Ill.

Supply Men's Association of American Boiler Manufacturers' Association of United States and Canada—President J. T. Corbett (J. T. Ryerson & Son), Chicago; Secretary, F. B. Slocum (Continental Iron Works), Brooklyn, N. Y.

Traveling Engineers' Association—Secretary, W. O. Thompson, N. Y. C. Car Shops, East Buffalo, N. Y.

Keen Cut.

"Would you marry him if you were me?"

"I'd marry anyone that asked me, if I were you."—Houston Post.

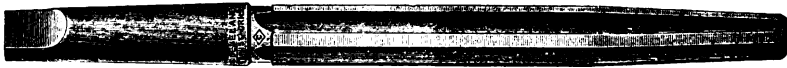
Not Enough On.

"She dances with abandon," remarked the advance agent for the Salome act. "Then no permit in this town," retorted the chief of police. "We require more covering that that."—Louisville Courier-Journal.

Doubtful Consolation.

"Mary," complained the husband, "why do you suppose it is that people all say I have such a large head?"

"I don't know, I'm sure, John," said his wife consolingly; "but never mind, there's nothing in it."



CLEVELAND BRIDGE REAMERS

These reamers are designed for rough, severe service. They are particularly adapted for use in structural iron and steel work and boiler plates.

Write for Circular U

The ~~CLEVELAND~~ Twist Drill Co.

Chicago

CLEVELAND

New York

NECESSITIES

High Grade Rubber Goods
Fire Hose
Reels, Nozzles
Fire Hose Carts
Rubber Cement
P. & W. Rubber Preservative
Rubber Boots
Leather-Soled Rubber Boots

Leather Belting
Upholsterer's Leather
Leather and Silk Fringes
Vestibule Diaphragms
Gimp
Brass Nails
Leather Head Nails

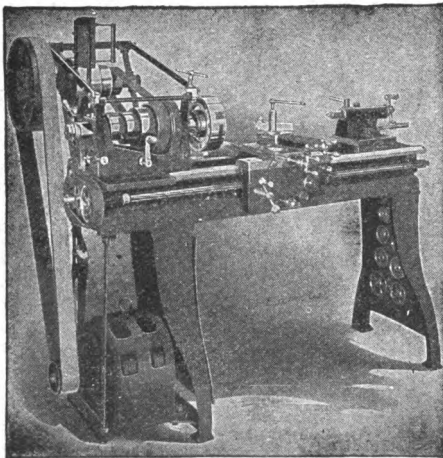
Signal Flags
Bunting
Linoleum
Cab Cushions
Cab Curtains
Track Jacks
Economy Soap Stock
Nut Locks

GUILFORD S. WOOD

Great Northern Building,

CHICAGO, ILLINOIS

How to Apply Individual Motor Drive to Existing Machine Tools



The picture shows a standard lathe being driven by a constant Speed Induction Motor. All of the speed changes are obtained by shifting the short belt by means of the Burke Elec-

tric Company Speed Change Device. The lathe operates at any speed from the lowest to the highest, and is started, stopped and reversed instantly by the motor which is controlled by the switch at the top of the picture.

The question, "Can I afford motor drive?" is already pretty well answered. The question is "Can I afford *not* to have motor drive?" "Can I meet competition?"—"Can I exist in business with old methods?" These questions demand your attention.

Our illustrated bulletin No. 111-C states some facts about electric motor drive, and shows how to apply motors directly to the lathes, shapers, milling machines, etc., already in your shop. It contains valuable information, and it's free to everyone interested in getting more work out of existing machine tools.

Send name and address to

BURKE ELECTRIC COMPANY

Main Office and Works: Erie, Penna.

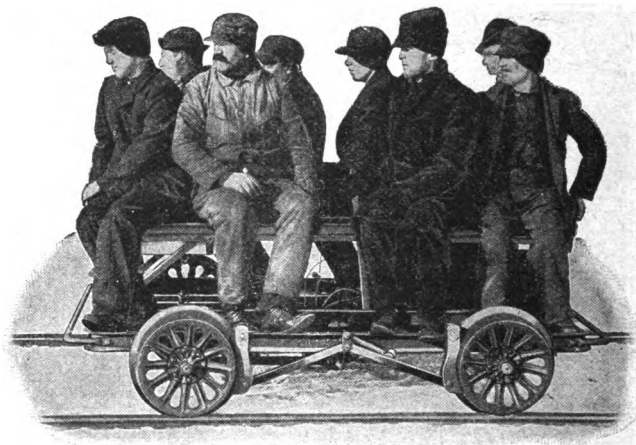
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Roadmasters Want It!

At the 30th Annual Meeting of the Roadmasters' and Maintenance Association of America, held on September 10th to 13th, 1912, in the convention hall of the Hotel Statler, Buffalo, N. Y., the Committee on New and Improved Track Appliances reported as follows:

Motor Hand Cars for Section Men and Extra Gangs

A gasoline motor hand car of simple design weighing from 650 to 700 pounds is one of the latest innovations in the maintenance of way department, and when placed in the hands of a reasonably intelligent foreman is a good investment and is recommended. Place them in the hands of each foreman first who in the estimation of the roadmaster is capable of handling them properly, and it will only be a short time when every foreman will study their mechanism and all will be able to handle them as easily as the common hand car.



Roadmasters want the "ROCKFORD" Because it has These Features:

Safety Device to regulate speed. This feature is optional with purchase.

Magneto Ignition eliminates dry cells, spark coil and timer.

Welded Steel Channel Frame preserves alignment of crank shaft and prevents strain of engine.

Automatic Force Feed Oiling System insures positive and sufficient lubrication.

Write for Catalogue and Circular showing Cost of Operation

Chicago Pneumatic Tool Company

1010 Fisher Building
CHICAGO

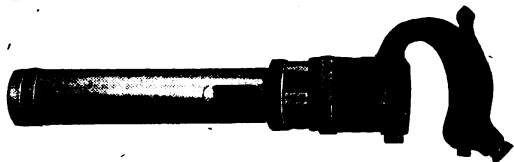
Branches
Everywhere

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NEW YORK

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Give Your Customers Boiler Insurance

YOU WON'T HAVE TO WRITE A POLICY. MERELY STATE ON THE INVOICE: "The flues in this boiler have been expanded with the Little Giant Flue Expanders, operated by Little Giant Flue Rolling Machines, and beaded with a Boyer Beading Hammer; the tapping has been done, and the staybolts have been run in, with Little Giant Reversible Tapping Machines; the STEAM TIGHT RIVETS have been driven by Boyer Hammers.



No. 90 BOYER RIVETING HAMMER.

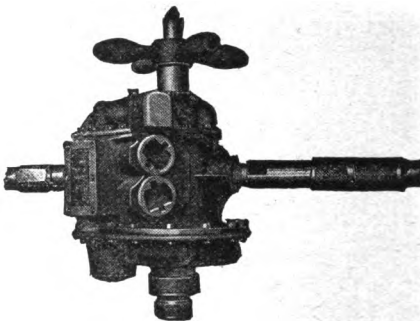
BOYER Riveting Hammers, with the aid of Boyer Holders On, make a specialty of Steam Tight Rivets that DO NOT HAVE TO BE CALKED.

BOYER Chipping Hammers give that steady reliable service day in and day out, that a boiler is expected to give.

BOYER Hammers are subjected to test before shipment, similar to the test you give your boilers, known as our "Power Test." Hammers that do not have the required power or rapidity of blow, and that do not come up to standard in every respect are thrown out. The records of those that pass the test are filed for future reference.

Boilers are tested for the Quantity and Quality of steam generated: for the Horse Power developed; and for the Fuel Consumption required to produce these results.

LITTLE GIANT DRILLS are tested for speed, for their pulling or Horse Power and for Air Consumption. If they do not come up to standard they are rejected. The recent improvements made in these drills made it so easy to pass these tests that we RAISED THE STANDARD, but every LITTLE GIANT DRILL has to "toe the mark."



No. 2 Improved Little Giant Drill.

Send for our Pneumatic Tool Bulletins.

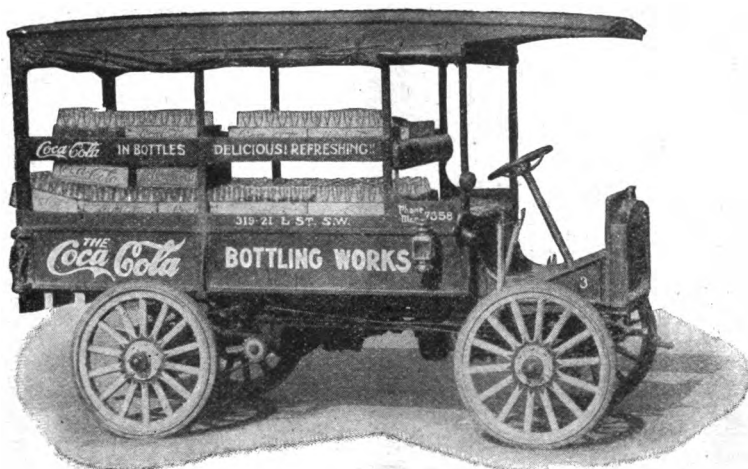
CHICAGO PNEUMATIC TOOL CO.

1010 Fisher Bldg.
CHICAGO

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NEW YORK

Hauls One Ton at One Cent per Mile



This is a "Little Giant" truck owned by the Coca-Cola Bottling Works, Washington, D. C., and was purchased two years ago. This concern operates two cars of this make.

This truck recently made the trip to Sandy Springs, Md., and return, loaded with 2,000 pounds, a distance of about 45 miles, on $2\frac{1}{2}$ gallons of gasoline, a record which stands alone for a truck of this capacity.

Delivering 2,000 pounds at the rate of 1 cent a mile, comes very nearly being the last word in operating economy.

Write for Circular 134 showing cost of operation.

Chicago Pneumatic Tool Company

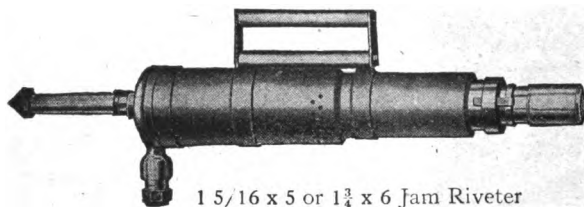
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NEW YORK OFFICE
50 Church St.

Jam Riveting with Compressed Air

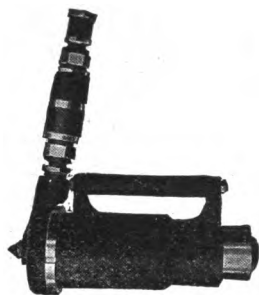
Jam Riveters, with wood handles, are arranged for use with or without extension or tail piece. They are particularly adapted for riveting between channels on ship or structural work, and also for flue expanding and crown sheet cleaning on locomotives, or wherever riveting must be done in close quarters.



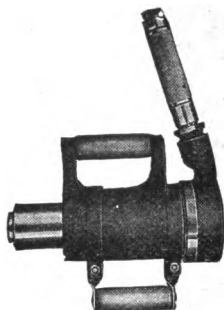
1 5/16 x 5 or 1 3/4 x 6 Jam Riveter

The 1 5/16 x 5 will work in 20 1/2 inch space
Code..... Ableness

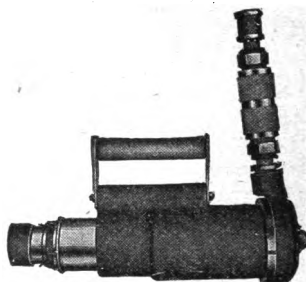
The 1 3/4 x 6 will work in 24 inch space.
Code..... Ablepsy



1 1/2 x 3 3/8 Short Jam Riveter
Will work in 12 1/2-inch space
Code..... Ableneath



1 5/16 x 2 Jam Riveter
Code..... Ablique
1 3/4 x 2 Jam Riveter
Code..... Ablinger
These will work in 8-inch space



1 1/2 x 3 3/8 Long Jam Riveter
Will work in 16-inch space
Code..... Ablenax

For narrow spaces when the ordinary jam riveter cannot be used we recommend our short jam riveters, in four standard sizes as shown. The longer the stroke of the piston, the more powerful the blow, so it is desirable to use as long a jam riveter as possible.

The 1 1/2 x 3 3/8 Short and the 1 3/4 x 2 and 1 5/16 x 2 Jam Riveters are specially constructed to take a short rivet set held in place by a ball and spring lock instead of the ordinary set clip.

Send for Bulletin 125

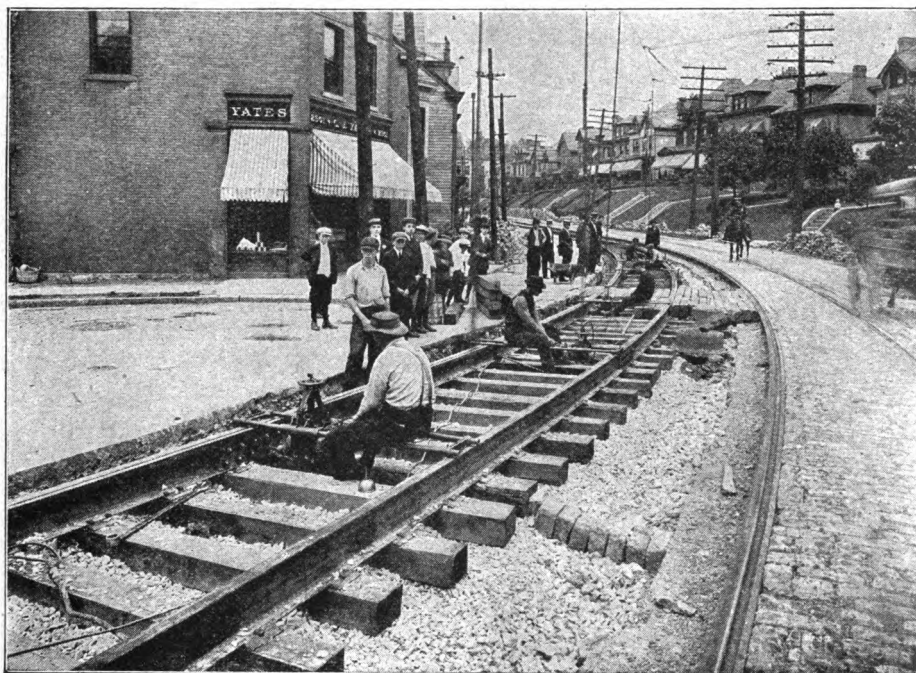
CHICAGO PNEUMATIC TOOL CO.

BRANCHES EVERYWHERE

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New York
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Drilling Track With Accuracy and Rapidity



This photograph shows Five Duntley Electric Track Drills reaming joint holes on the tracks of the Pittsburgh Railways Co.

As evidence of the portability and flexibility of the Duntley Electric Track Drill, in eight hours 186 holes were drilled with one track drill. This time included the removal of the drilling machinery from the track to allow cars to pass, and as the running schedule was every six minutes, there were more than 75 interruptions to the work during the eight hours.

A test was made on a section of rail where the cars were not running and in a period of 30 minutes, 32 holes were drilled.

PORTABLE TOOLS FOR ALL PURPOSES. WRITE FOR BULLETINS.

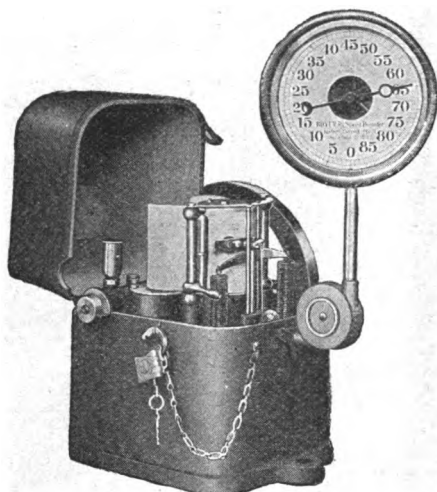
CHICAGO PNEUMATIC TOOL COMPANY

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USE THE BOYER SPEED RECORDER AND GET SPEED AND SAFETY



Boyer Railway Speed Recorder

Regulate the speed of your trains and give your passengers safety.

The time is coming when the public will insist that all trains be provided with these modern preventatives of railroad accidents.

The dial tells you the speed at which your train is running and the chart makes a permanent record of the speed at which you have passed any given point on your line, number of stops, etc.

Write for Catalogue No. 39.

Chicago Pneumatic Tool Company

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THE CHICAGO PNEUMATIC T O O L C O M P A N Y

MANUFACTURE THE FOLLOWING
PNEUMATIC TOOLS, APPLIANCES, ETC.

After Coolers
Air Compressors
Air Economizers
Air Forge, Chicago
Air Motors
Air Receivers
Air Jacks
Airoilene
Airoilene Grease
Angle Gears, Little Giant
Angle Gears, Boyer
Annealing Machines
Armour Scaling Machines
Automatic Oiling Devices
Bell Ringers, Little Giant
Blow-offCocks, Little Giant
Chucks, Drill
Chucks, Expanding
Commercial Car
Cranes
Drift Bolt Drivers
Drills, Boyer
Drills, Keller
Drills, Little Giant
Drills, Rock
Drilling Stands
Elevators
Electric Drills, Duntley
Electric Grinders, Duntley
Engineers' Valves
Flue Cutters, Chicago
Flue Rollers, and Ex-
panders, Little Giant

Grinders, Portable Electric
Hammers, Riveting
Hammers, Chipping and
Calking
Hammers, Stone
Hoists, Duntley Electric
Hoists, Pneumatic Geared
Hoists, Straight Lift
Holders-on
Hose, Special High Grade
Hose Clamp Tool
Hose Couplings(Universal)
Inter-Coolers
Magnetic Old Man
Painting Machines
Pipe Bending Machines
Railway Motor Section
Cars
Reamers
Reheaters
Rivet Busters
Riveters, Jamb
Riveters, Yoke
Riveters, Compression
Sand Rammers
Sand Sifters
Speed Recorders
Staybolt Chucks
Stone Dressers
Staybolt Nippers
Vacuum Pumps
Winches, Portable

Put Your Advertising Appropriation on Wheels



The Little Giant earning its keep by advertising its owner's business.

Clean Delivery Suggests Clean Shop or Store.

IT ATTRACTS ATTENTION.

IT AROUSES INTEREST.

IT CREATES DESIRE.

It makes your delivery system an advertising investment instead of an expense alone.

But as your business increases your responsibilities will increase. You will have to "make good." You will have to HOLD the new trade. This you can do by giving satisfactory service and here is where the Little Giant will help you. It will keep its promises to you and enable you to keep your promises. It will give you service and "make good."

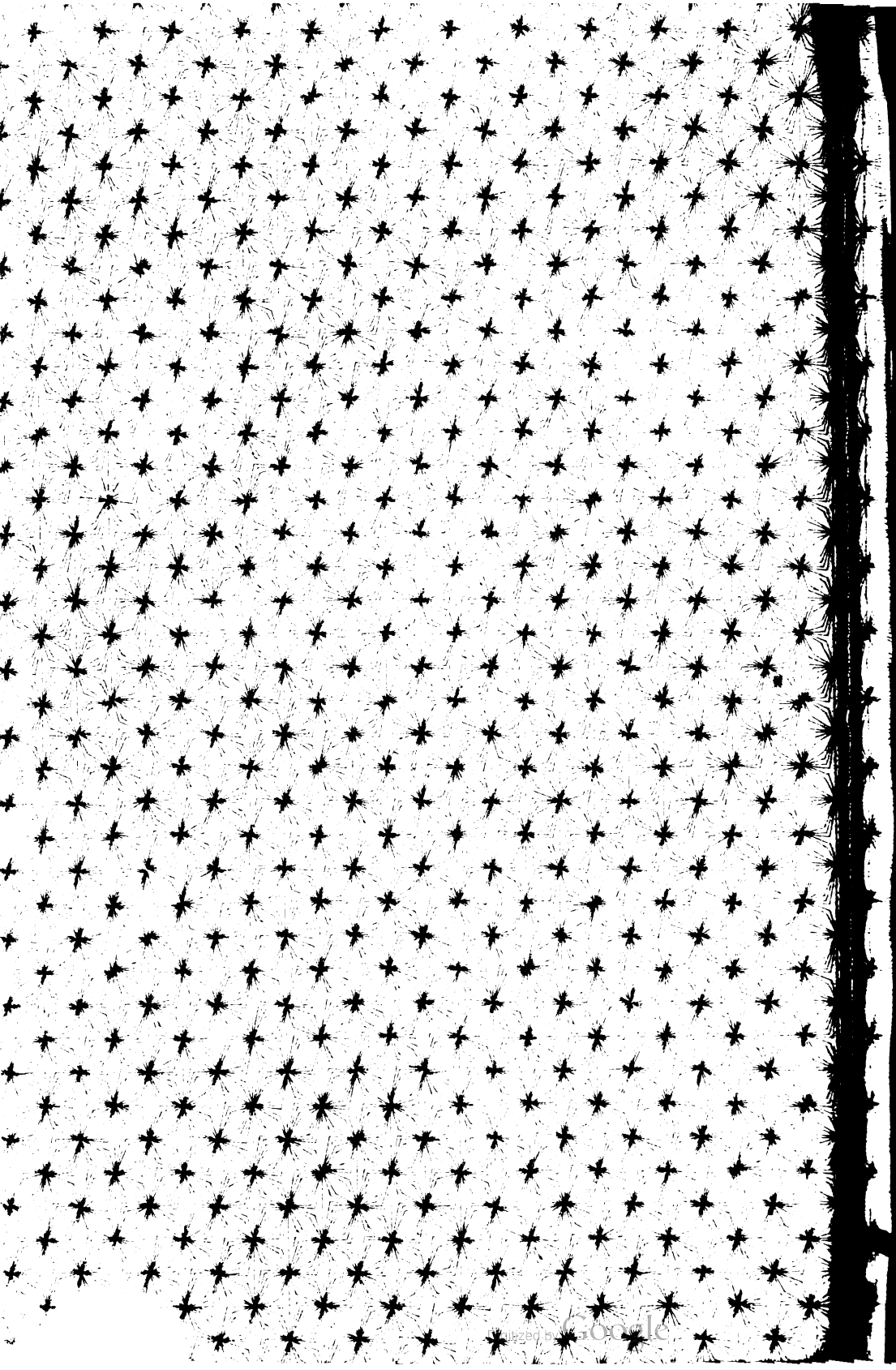
If you are interested in a delivery truck backed by \$11,000,000.00, twenty years experience and a good will represented by 20,000 satisfied customers, write us.

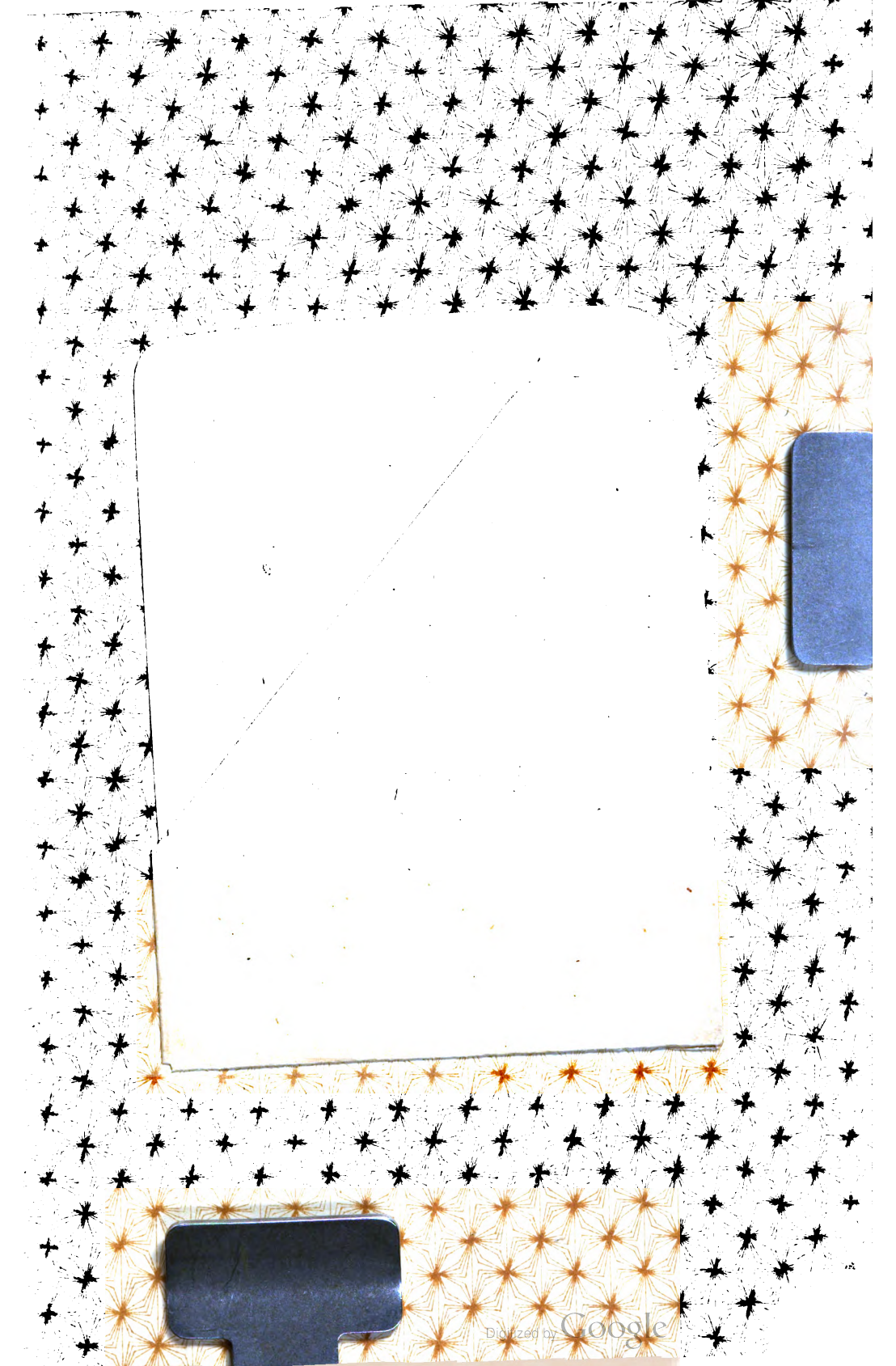
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